Addictive Behaviors 42 (2015) 216–221

Contents lists available at ScienceDirect

Addictive Behaviors

Context counts: Solitary drinking explains the association between depressive symptoms and alcohol-related problems in undergraduates

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HIGHLIGHTS

- We test the mediating roles of drinking contexts in depression-related alcohol use.
- High-risk pathway via solitary drinking in those with elevated depressive symptoms.
- Low-risk pathway via drinking at parties in those high in depressive symptoms.
- Context may be a malleable target for treatments for depression-related drinking.

ARTICLE INFO

Available online 26 November 2014

Keywords:
Depressive symptoms
Problematic drinking
Drinking context

ABSTRACT

Introduction: According to theory, depressed individuals self-medicate their negative affect with alcohol. Due to isolation and interpersonal difficulties, undergraduates with elevated depressive symptoms may do much of their drinking alone and/or in intimate contexts (e.g., with family or romantic partners) rather than at normative social events (e.g., parties). Evidence suggests drinking in these contexts leads to heavy use and alcohol-related problems. Accordingly, context may be an explanatory mechanism linking depressive symptoms to problematic drinking. This pathway remains understudied in the literature. Our study aimed to examine solitary and intimate drinking as distinct mediators of the depression–problematic drinking association. We hypothesized that depressive symptoms would be positively associated with solitary and intimate drinking which in turn would be associated with elevated alcohol use and related problems.
Methods: Undergraduates ($N = 295$; 72% women) completed online self-reports.
Results: Consistent with hypotheses, path analyses supported depressive symptoms as a positive predictor of solitary drinking, which in turn was a positive predictor of alcohol-related problems, but not of alcohol use. Counter to hypotheses, depressive symptoms were unrelated to intimate drinking. Interestingly, depressive symptoms were negatively associated with drinking at parties, which in turn led to reduced risk for elevated alcohol use and related problems.
Conclusions: Our results shed new light on the depression pathway to problematic drinking in undergraduates by considering the role of drinking context. Our findings suggest undergraduates with elevated depressive symptoms are at risk for potentially problematic drinking because they are drinking alone. Solitary drinking represents a malleable target for clinical interventions aimed at reducing risky depression-related alcohol use.

1. Introduction

Problematic drinking (i.e., heavy use and alcohol-related problems) poses risks in undergraduates. Roughly 30–40% of students drink heavily, 19% miss class due to hangovers, and 14% have unplanned sex while intoxicated (Adlaf, Demers, & Gliksman, 2005). To advance etiological models, more theory-guided research is needed to identify predictors of problematic drinking.

Depressive symptoms relate to problematic drinking (Grothues et al., 2008). This may be particularly relevant among young adults, as nearly 30% of undergraduates report depressive symptoms (Ibrahim, Kelly, Adams, & Glazebrook, 2013). The self-medication hypothesis predicts that those high in depressive symptoms drink for alcohol's analgesic effects (Khantzian, 1997). Complimenting this, according to social

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http://dx.doi.org/10.1016/j.addbeh.2014.11.031
0306-4603/

learning theory (SLT), depressed persons should be highly responsive to these analgesic effects, and thus will learn that drinking dampens ruminative thoughts and numbs painful memories (Castellanos-Ryan & Conrod, 2012). Supporting theory, research links elevated depressive symptoms to drinking for coping with depression motives (Grant, Stewart, & Mohr, 2009) and to problematic drinking outcomes (Mushquash et al., 2013; Stewart et al., 2010). Despite this work, much remains to be understood about how the depression–problematic drinking risk pathway unfolds.

Due to low behavioral activation (e.g., low motivation or energy), undergraduates with elevated depressive symptoms spend less time at social events–where undergraduates normatively drink–and instead spend more time alone and in intimate settings (e.g., with family or romantic partners; Baddelely, Pennebaker, & Beevers, 2012). When alone and when around loved ones, those high in depressive symptoms experience particularly elevated negative affect (Pulkki-Raback et al., 2012). According to SLT, the heightened negative emotionality when alone may lead to solitary drinking in an effort to dampen loneliness and isolation (Castellanos-Ryan & Conrod, 2012). Given that depressive symptoms are also associated with interpersonal difficulties (Beach, Jones, & Franklin, 2009), undergraduates with elevated depressive symptoms may also drink in intimate settings to cope with interpersonal distress and low mood (Reyno, Stewart, Brown, Horvath, & Wiens, 2006). In turn, SLT indicates that it is *through* frequent self-medication drinking in solitary and intimate contexts that depressive symptoms predict heavy use and alcohol-related problems.

Many undergraduates drink at social events (e.g., parties, bars), which is associated with problematic drinking in young people; however, 15% drink outside of normative social contexts and this is considered particularly risky behavior (Neff, 1997; O'Hare, 1990). Research indicates solitary drinkers (vs. social drinkers) use alcohol excessively, report more alcohol-related problems, and drink to self-medicate (Christiansen, Vik, & Jarchow, 2002; Holyfield, Ducharme, & Martin, 1995). Solitary drinkers are at higher risk for developing alcohol use disorders compared to those who limit drinking to social events (Abbey, Smith, & Scott, 1993). Far less is known about risks related to intimate drinking. Knowledge from a handful of studies suggests interpersonal conflict situations are associated with heavy drinking (Mohr et al., 2001; Reyno et al., 2006) and alcohol-related problems (Buckner, Schmidt, & Eggleston, 2006).

While the link between solitary drinking and heavy/problem drinking is well-established, the few studies examining links between depressive symptoms and solitary and intimate drinking in undergraduates show inconsistent results. For example, some studies demonstrate that depressive symptoms are positively associated with solitary heavy drinking (Christiansen et al., 2002; Gonzalez & Skewes, 2012), while others indicate that depressive symptoms are unrelated to solitary drinking (e.g., Gonzalez, Collins, & Bradizza, 2009). A notable limitation of this work is that participants were often classified arbitrarily as solitary (i.e., solitary binge drinking $\geq$1 in past month) and social (i.e., no solitary binge drinking) drinkers. Apart from statistical limitations of dichotomization (Streiner, 2002), it is likely some individuals drink both while alone and while with others. A better method would be to ask about frequency of drinking in different contexts. In terms of intimate drinking, a daily process study by Mohr and colleagues (2001) showed on days with elevated interpersonal conflict, undergraduates high in neuroticism (i.e., a dispositional tendency toward negative affect) drank more frequently at home. Likewise, Reyno et al. (2006) demonstrated that in women with alcohol problems, elevated depressive symptoms predicted heavy drinking in situations involving conflict with others. One central theoretical limitation of extant work is that no study to date has examined the mediating roles of solitary and intimate drinking contexts in depression-related drinking. SLT suggests that *through* these contexts, individuals with elevated depressive symptoms may engage in problematic drinking (Pihl & Peterson, 1995); however, this remains to be tested.

Our primary goal was to advance etiological risk models by providing the first empirical test of solitary and intimate drinking as explanatory variables in depression-related problematic drinking. Also, contrasting previous work, we examined solitary and intimate drinking (i.e., with family or romantic partners) as distinct mediators in the *same* model to tease apart the relative explanatory contribution of each context on depression-related drinking. This distinction is theoretically relevant, as these contexts may be associated with distinct patterns of risk; however, this has yet to be examined in the literature. We also included drinking at parties in the model. Extant literature indicates undergraduates drink frequently at social events, where many of their peers engage in heavy drinking (Kuntsche, Knibbe, Gmel, & Engels, 2005). Our rationale for including drinking at parties was to control for normative context-related drinking, and thus examine the unique explanatory power of solitary and intimate drinking. Based on SLT and existing work (Christiansen et al., 2002), we hypothesized that elevated depressive symptoms would be associated with increased frequency of solitary and intimate drinking, and that these drinking contexts would in turn be unique predictors of relatively high levels of alcohol use and alcohol-related problems.

2. Material and methods

2.1. Procedure and participants

Our study was approved by the Health Sciences Research Ethics Board at Dalhousie University. We used baseline data from a larger study on personality and drinking motives (Mackinnon, Kehayes, Clark, Sherry, & Stewart, in press). Undergraduates completed prescreening through mass screening protocols or via telephone screening interviews. Only drinkers ($\geq$4 drinking occasions in the past month) were included in this larger study. Participants completed self-report measures in the lab and were compensated with course credit or money ($10/hour).

Undergraduate drinkers (72% women; M_{age} = 20.77, SD = 3.77) were recruited via posters and an online participant pool website. The initial sample was N = 302, but due to extensive missing data on key study variables (>50%) from a few participants; the final sample in our study was 295. Most participants were Caucasian (90%).

2.2. Questionnaire measures

2.2.1. Mood and Anxiety Symptom Questionnaire

One of the questionnaires used was the Mood and Anxiety Symptom Questionnaire (Clark & Watson, 1991; Watson et al., 1995). The anhedonic depression subscale was used to assess depressive symptoms. This subscale originally contained 22-items, but we omitted the item asking about suicide for ethical reasons (Grant et al., 2009).[1] Participants indicated how much they experienced each symptom in the past 6 months. Responses were made on a 5-point scale (1 = *not at all*; 5 = *extremely*). Summed scores were used. Research suggests excellent internal consistency (α = .91; Keogh & Reidy, 2000) and good concurrent and predictive validity for the anhedonic depression subscale (Buckby, Yung, Cosgrave, & Killackey, 2007). The present alpha was .93, which is excellent.

2.2.2. Drinking contexts

Adapted from Cooper's (1994) drinking contexts measure, undergraduates rated how often they drank in these four contexts in the past 6 months: alone, with family, with a romantic partner, and at

[1] Data were collected by undergraduate research assistant volunteers who were not experienced in conducting suicide risk assessment and intervention. Thus, for ethical reasons, we omitted the one MASQ item from the anhedonic depression subscale assessing suicide ideation.